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EXAMINER	
NGUYEN, STEVE N	
ART UNIT	PAPER NUMBER
2138	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,644	KIM ET AL.	
	Examiner	Art Unit	
	Steve Nguyen	2138	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-21 are currently pending and have been examined.

Drawings

2. The amended drawings are accepted. The objection to the drawings in the first office action is withdrawn.

Claim Objections

3. In view of the amended claims, all objections in the prior Office Action are withdrawn.

Claim Rejections - 35 USC § 112

4. The U.S.C. 112, second paragraph rejection of claims 1, 2-4, 6-8, and 21 has been withdrawn in view of the amended claims.

Response to Arguments

5. Applicant's arguments filed 11/22/2006 have been fully considered but they are not persuasive.

The Applicants argue that the cited portions of Seidel relate to transmission rather than reception, and that Seidel does not disclose a physical layer for the reception and decoding of a control message and data.

The Examiner would like to note that while Seidel teaches the transmission of control data on a separate control channel in col. 2, lines 26-28, reception of the data is inherent. For example, Seidel discloses reception and decoding of the sequence numbers in Fig. 5, block 260. In col. 7, lines 62-65, Seidel states that logical channels are passed to the physical layer when incremental redundancy is used. In other words, the physical layer receives and decodes the messages in order to make a decision on whether to retransmit the data according to incremental redundancy techniques (HARQ Type II as discussed in col. 1, lines 14-16 and col. 1, lines 46-52). Furthermore, one of ordinary skill in the art would have recognized that the physical layer would have been responsible for the reception and decoding of data according to the IEEE Standards Terms Dictionary definition of physical layer: "The layer responsible for interfacing with the transmission medium. This includes conditioning signals received from the MAC for transmitting to the medium and processing signals received from the medium for sending to the MAC."

Applicant's arguments with respect to Decker have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 1 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Seidel et al (US Pat. 6,658,005; hereinafter referred to as Seidel) in view of Persson et al (US Pat. 6,421,803; hereinafter referred to as Persson). See MPEP 2112(III).

As per claim 1:

Seidel teaches an apparatus for controlling the operation of the data channel in a mobile communication system that simultaneously a control message over the data control channel and the data over the data channel and supports hybrid automatic repeat request (HARQ) (abstract), the apparatus:

- a physical layer (col. 7, lines 62-65) for receiving the traffic data and the control message from the data control channel and the date channel separately and decoding the received traffic data and control data (col. 2, lines 26-28);
- a physical layer's HARQ controller for processing a result of the decoding of at least one of the received control message and data (col. 7, lines 26-28; the result of decoding the sequence numbers in step 260 is used to decode PDUs in step

270) and for controlling the physical layer according to a result of the processing (col. 7, lines 35-37; an ACK must be sent on the physical layer according to the definition as provided above).

Although Seidel does not explicitly disclose a physical layer's HARQ controller, this element is inherent as shown above. Furthermore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a receive data at a physical layer and to process the data with a HARQ controller communicating with the physical layer.

Persson in an analogous art teaches a conventional transmission system in which data is received and processed through the physical layer of a transmitter and a receiver (Fig. 2; col. 4, lines 48-52). Therefore, a person of ordinary skill in the art at the time the invention was made would have recognized that a physical layer interfaces with the transmission medium and therefore receives and processes data.

As per claim 2:

Seidel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller comprises:

- at least one HARQ state machine for controlling a state transition among a plurality of states, wherein the plurality of states includes an initial state for initializing parameters while waiting for the control message to be received over the control channel (Fig. 5, step 100), a control message decoding state for decoding the control message, a control state for calculating a result of the control message decoding (Fig. 5, element 260), a demodulation state for

demodulating the received data channel (Fig. 5, element 270), a data decoding state for turbo decoding the demodulated data (Seidel teaches that Turbo encoding can be used in col. 5, lines 24-29; therefore the packet must be decoded), and a response state for transmitting a response based on a result of the turbo-decoding (col. 7, lines 32-34); and

- a state function section for controlling the state transition of the at least one HARQ state machine depending on the result of the processing (col. 7, lines 38-40; the state machine transitions to state 220 as long as the session is ongoing, else it transitions to the END state).

As per claim 3:

Seidel further teaches the apparatus of claim 1, further comprising a data path processor for controlling a processing path of data received over the data channel (processing is done by a processor in col. 5, lines 37-40).

As per claim 4:

Seidel further teaches the apparatus of claim 1, further comprising an output buffer controller for storing data obtained by demodulating and decoding data received over the data channel and outputting the stored data to the HARQ controller (a buffer controller must be present for the combining to take place as described in col. 7, lines 29-32).

As per claim 5:

Seidel further teaches the apparatus of claim 2, wherein the at least one HARQ state machine comprises two HARQ state machines (Fig. 5; the state machine outlines

the method of Seidel. However, it would have been obvious to equivalently express the state machine separately for the transmitter and the receiver).

As per claim 6:

Seidel further teaches the apparatus of claim 5, wherein an amount of delay for the response comprises 2 slots, wherein each of the two HARQ state machines alternately controls the state transition for 2 slots for the data received over the data channel (Fig. 5; the state machine controls the state transition for steps 260 and 270 which are two slots of data).

As per claim 7:

Seidel and Persson teach the apparatus of claim 6 above. Not explicitly disclosed is wherein decoding the data in the physical layer, the two HARQ state machines controls a transition to a waiting state until previous decoding operation of the decoder has ended.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transition to a waiting state on a state machine. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the packet must first be decoded before further action can be taken.

As per claim 8:

Seidel further teaches state processors for performing control operations of the HARQ state machine (col. 5, lines 37-40).

As per claim 9:

Seidel further teaches the apparatus of claim 1, wherein the physical layer comprises one data channel turbo decoder (Seidel teaches that Turbo encoding can be used in col. 5, lines 24-29).

As per claim 10:

Seidel further teaches the apparatus of claim 1, wherein the data channel is decoded by a turbo decoder (Seidel teaches that Turbo encoding can be used in col. 5, lines 24-29; therefore the packet must be decoded with a decoder).

As per claim 11:

Seidel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller requests a retransmission of the data from the mobile communication system when the results of the decoding indicate that the decoding was unsuccessful (col. 7, lines 33-34).

As per claim 12:

Seidel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller transmits the decoded data to an upper layer when results of the decoding indicate that the decoding was successful (col. 7, lines 32-33).

As per claim 13:

Seidel further teaches the apparatus of claim 1, wherein the physical layer comprises a control channel decoder for decoding the received control messages (Fig. 5, element 260), a demodulator for demodulating the received data, and a data decoder for decoding the demodulated data (Fig. 5, element 270).

As per claim 14:

Seidel further teaches the apparatus of claim 13, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the decoded control message and outputs the decoded control message to the demodulator and the data decoder when the HARQ controller determines to demodulate the data (col. 7, lines 23-28; the data is demodulated and decoded depending on the sequence numbers received on the control channel).

As per claim 15:

Seidel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the processed result and outputs the result of the decoded control message to the physical layer when the HARQ controller determines to demodulate the data (col. 7, lines 23-28; the data is demodulated and decoded depending on the calculation of the beginning of the frame which is determined by the sequence numbers received on the control channel).

As per claim 16:

Seidel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller determine whether to demodulate and decode the received data depending on the result of the decoding of the control message, outputs the decoded control message to the demodulator and the decoder during demodulation, decoding the received data (col. 7, lines 23-28; the data is demodulated and decoded depending on the sequence numbers received on the control channel), and controlling the output of

a response signal according to the result of the decoding of the data (col. 7, lines 35-37).

As per claim 17:

Seidel further teaches apparatus of claim 1, wherein the physical layer's HARQ controller delivers the decoded data to the upper layer (col. 7, lines 32-33).

As per claim 18:

Seidel teaches a HARQ (Hybrid Automatic Repeat Request) controller for retransmitting data in a mobile station of a mobile communication system (abstract), the HARQ controller comprising:

- at least one HARQ state machine for receiving state information from a physical layer (col. 7, lines 62-65; Fig. 5, block 270), for determining if a transition to a next state should occur (col. 7, lines 32-34; a decision is made whether the packet was correctly received as shown in Fig. 5, block 280) and for providing a result of the determination to a state function section (Fig. 5, block 290); and
- a state function section for indicating an operation of the physical layer according to the result of the determination by the HARQ state machine (col. 7, lines 35-37; the result is sent to the transmitter which is in the physical layer).

Although Seidel does not explicitly disclose indicating an operation of the physical layer, this element is inherent as shown above. Furthermore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to indicate operation of the physical layer based on results of the HARQ state machine.

Persson in an analogous art teaches a conventional transmission system in which data is received and processed through the physical layer of a transmitter and a receiver (Fig. 2; col. 4, lines 48-52). Therefore, a person of ordinary skill in the art at the time the invention was made would have recognized that a physical layer interfaces with the transmission medium and therefore necessarily operates based on the state function section.

As per claim 19:

Seidel further teaches the apparatus of claim 18, wherein the mobile station receives a data channel and a control channel, wherein the control channel is used for transmitting control information for decoding the data channel (abstract).

As per claim 20:

Seidel further teaches the apparatus of claim 19, wherein the mobile station includes a control channel decoder for decoding the data channel (Fig. 5, element 260), a data channel demodulator for demodulating the data, and a data channel decoder for decoding the demodulated data (Fig. 5, element 270).

As per claim 21:

Seidel further teaches the apparatus of claim 20, wherein the state function section controls any one of the control channel decoder, the data channel demodulator and the data channel decoder (Fig. 5, element 260 is controlled by a state function).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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